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C l a i m s

1. Means for condition control of a pipeline (1) incorporating a fluid flow pipe (15) for transport of a fluid, comprising a plurality of ultrasonic transducers (3₁-3_N) arranged in the vicinity of the external surface (100) of the pipe (15), and wherein a characterization of the pipeline (1), for example a measurement of the wall thickness, may be performed based on emission, receipt and analysis of the ultrasonic signals (3₁-3_N), characterized in that the ultrasonic transducers (3₁-3_N) are positioned as a part of at least one tape (2), the tape (2) being provided with a channel multiplexer (11) electrically connected to several of the transducers (3₁-3_N) by means of conducting tracks (9) on the tape (2), and wherein the channel multiplexer (11) provides a common electrical connection for said several transducers (3₁-3_N) between the tape (2) and its surroundings.
2. Means for condition control according to claim 1, wherein the transducers (3₁-3_N) are arranged in an array pattern (4).
3. Means for condition control according to claim 1, wherein the at least one tape (2) is attached on to the external surface (100) of the pipe (15) by means of a clamping or an attachment device (5).
4. Means according to claim 3, comprising a protective coating (7) for thermal and mechanical protection, the protective coating (7) arranged on the external surface (100) of the pipe (15) also functioning as a clamping or an attachment mean (5) or part of a clamping or an attachment means (5) for the tape (2).
5. Means according to claim 1, wherein the tape (2)

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comprises electrical elements, such as for example electrical/electronic components (8) and conducting tracks (9).

5 6. Means according to claim 1, wherein the tape (2) comprises a protective layer (13), for example a layer of silicon rubber, for thermal and mechanical protection.

10 7. Means according to claim 3, comprising a multiplexer (11) for multiplexing signals from the various transducers (3₁-3_N).

15 8. Means according to claim 3, comprising a digital thermometer (12) for measuring the temperature, allowing characterizing to be performed with temperature compensation.

20 9. Means according to claim 3, comprising a plurality of tapes connected together in order to cover a larger part of the circumference of the pipe (15).

10. Means according to claim 1, wherein the tapes (2) cover a critical segment of the pipe (15) circumference.

25 11. Means according to claim 1 or 2, wherein the transducers (3₁-3_N) are covered by an external protective coating (7) for corrosion protection or insulation.

30 12. Means according to claim 1, wherein the ultrasonic transducers (3₁-3_N) are connected to an electrical contact mean (30) in order to provide a possibility of connection with external equipment (200,300).

35 13. Means according to claim 12, wherein the contact means (30) are placed on the external surface of the protective coating (7), whereby the contact means (30) may be accessible by removal of a part of the protective

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coating (7) surrounding the contact means.

14. Means according to claim 12, wherein the contact means (30) comprises an electrical cable extending out through the protective coating (7).

15. Means according to claim 12, wherein the contact means (30) comprises an protruding electrical cable terminated close to the external surface of the protective coating (30).

16. Means according to claim 14 or 15, wherein the cable is terminated in a subsea contact.

17. Means according to claim 1, comprising at least two tapes (2) for transducers, the first tape (2A) being arranged on one side of a weld or joint (20) and a second tape (28) being arranged on the other side of said weld or joint (20).

18. Means for condition control of a pipeline (1) with a fluid flow pipe (15) for transport of a fluid, comprising a plurality of ultrasonic transducers which are embedded in and protected by a surrounding polymer material, the polymer material functioning as protection of the exterior surface (100) of the pipe (15), and wherein emission, receipt and analysis of ultrasonic signals by means of transducers (3₁-3_N) are used for characterization of the pipeline, for example a measurement of the thickness of the pipeline,

characterized in that the ultrasonic transducers (3₁-3_N) are arranged as an integral part of at least one tape (2) and that the ultrasonic transducers (3₁-3_N) are connected to an external drive, control and signal analysis unit by means of an inductive connection means, and wherein the ultrasonic transducers (3₁-3_N) are embedded in and protected by a surrounding polymeric material, the

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polymeric material functioning as a protection of the exterior (100) of the pipe (15).

19. System for condition control of a pipeline for
5 transport of a fluid, comprising an ultrasonic apparatus
for generation of drive signals for a plurality of
ultrasonic transducers emitting ultrasound, an A/D
converter which also is connected to the ultrasonic
transducers for converting analog signals from the
10 ultrasonic transducers to digital data corresponding to
the analog signals from the ultrasonic transducers and
transmitting the digital data to a control and data
analysis unit, analyzing the received signals,
characterized in that a plurality of
15 ultrasonic transducers are arranged as an integral part of
one or more tapes, the tapes being permanently attached to
the external surface of the pipeline wall and ply to the
pipeline surface when clamped, the ultrasonic transducers
(3₁-3_N) being embedded in and protected by a surrounding
20 polymeric material, the polymeric material functioning as
a protection for the external surface (100) of the pipe
(15), the properties of the pipeline, such as for example
possible reduction of pipeline thickness or properties at
a weld or a joint, being calculated by means of the
25 digital data and a software module for thickness
calculation as a part of the data analysis unit.

20. System according to claim 19, wherein the software
module for thickness calculations comprises software for
30 an identification of the reflected acoustic signals in the
digital data and calculating the time delay between
emitted and reflected acoustic signals.

21. System according to claim 20, wherein the software
module for thickness calculations comprises software for
35 identification of the reflected acoustic signals in the
digital data and for analyzing the amplitudes of the

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reflected acoustic signals.

22. Means for condition control of a pipeline (1) incorporating a fluid flow pipe (15) for transport of a 5 fluid, comprising a plurality of ultrasonic transducers (3_1-3_N) arranged in the vicinity of the external surface (100) of the pipe (15), and wherein a characterization of the pipeline (1), for example a measurement of the wall thickness, may be performed based on emission, receipt and 10 analysis of the ultrasonic signals by means of ultrasonic transducers (3_1-3_N), characterized in that the ultrasonic transducers (3_1-3_N) are positioned as a part of at least one tape (2), the tape being embedded in and protected by 15 a surrounding polymeric material, the polymeric material functioning as protection of the external surface (100) of the pipeline (15).